

Enhancing Direct Assessment and Inspection with Remote Inspection Through Coatings and Buried Regions of Non-Piggable Pipelines

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EMAT Through Coating Inspection Qualified by the DOT at BP Prudhoe Bay, Alaska

Over 16,000 feet of oil transit line was inspected at the BP, Prudhoe Bay facility in Alaska by one of Sonic Sensors' EMAT Service Provider affiliates, Kakivik Asset Management. Kakivik was summoned by BP, in Prudhoe Bay, to help inspect an emergency shut down pipeline. Sonic Sensors immediately dispatched the appropriate EMAT Inspection system to be applied on the problem pipeline. A second Sonic Sensors affiliate, Spectrum Sales and Service, arrived shortly thereafter and two inspection teams worked simultaneously for most of the EMAT inspection work between August 16 and November 17, 2006. Through all the extensive qualifications the Sonic Sensors EMAT guided wave tool, CIRC, was selected as the ***Primary Screening Tool for Non-Piggable Lines***. The techniques used to inspect through the coatings were directly related to this current DOT sponsored project. Continual development of this tool lead to a field inspection of some excavated bitumen tar wrapped pipe.

Partially excavated in-service Pipeline inspected through tar coatings

December 15th 2006 a section of a 24 inch buried pipeline was replaced due to internal corrosion. A portion of this corroded pipe was preserved, with the coating intact, to evaluate the through coating inspection tool. There were three clusters of pitting corrosion present in this pipe sample. The clusters were approximately 1.5 inches in diameter, and were 20%, 40% and 70% deep. All of these indications were detected and sized relatively to each other from a single scan across the top surface of the pipe, on top of the bitumen tar wrapped coating. The success of this inspection qualification, on the known pipe sample, justified some additional inspections on some partially excavated active crude oil pipelines. Five if these 16 inch lines were inspected by simply brushing the dirt off the top surface of the bitumen tar wrapped surface. No indications were detected on four of the five lines. The fifth line was a dead leg, with out flow, and indications were found for most of the length. The indications were up to the 70% through wall pitting of the sample pipe for most of the pipe length. The pipe closest to the Tee joint was clear of indications. The indications grew larger and more numerous away from the Tee joint. Apparently the lack of flow in this leg provided a preferential environment for internal corrosion.

Assuming the sample pipe to be equivalent to the partially excavated active pipelines with the same coatings; the blind field test on 16" active pipes could be qualified to a detection limit of 20% corrosion.

This appears to be an acceptable commercial inspection.